“Will You Compete to Mobilize Your Knowledge?”: Learning on Indigenous Biodiversity-Based Adaptations among Native Communities of Eastern Himalayas, India

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Ecosystems and Ethnic Diversity: Resilience Foundation

- 26 tribes
- 110 ethnic groups

- Autonomous Adaptations on Livelihoods security

Climates
Humid, Sub-humid, Temperate, Sub-temperate and Alpine

Climate variability, ecological & socioeconomic stressors:
Ecological fragility-hydropower dam, PDS, MGNREGA, poor governance, etc.

Mountainous & remote located (Constraints)

Exclusive dependence on NR, high interactions with nature (opportunity)

Barter system among & between ethnic groups

Compulsive location specific learning & knowledge

Exclusive transformation

Top-to-bottom policy without community consultation

Social-ecological Resilience

Diversity in biocultural knowledge, indigenous institutions & collective decision making systems

Rich in knowledge, conservation & ecological ethics

Poor in commercial economy
28 tribes
110 ethnic groups: every one has its own dialect and language
On 11 Feb. 2013, The Discovery Channel discovered new language, called Koro (Tibeto-Burman Language), believed to be spoken by only about 800 people speak the language and it's highly endangered.
My research works for about 3 years in this track too

Adi war dance

Adi ponung dance: Story telling about jhum-land and community forest

Track of barter system: Butane Brokpa, here somewhere lies koro-track
Contests-led Community Mobilization Approaches

- Biodiversity contest
- Recipe contest
- Weaving/handicrafts contest
- Micro-enterprise contest

Here focus is given only of initial two contests
What is Biodiversity Contests

- **Biodiversity contest** is a grassroots ecoliterary tool in which rural community are mobilized in participatory manner to show their best knowledge and adaptation practices in the shortest period of time.

- The participants are given sufficient time to contact sources of learning-TKHS and also other published sources, collect sample of plants and information on:

  1. use and plants,
  2. habitat,
  3. availability pattern,
  4. any signal about impact of weather and climate change on plant/animal availability

- The best contestants are rewarded in a formal gathering with 1st, 2nd, 3rd & consolation prizes.

- These winners are then encouraged to promote TK-based learning and education, developing conservation and adaptation strategies related projects in respective villages.
Stakeholders of Biodiversity Contests

Participants

- Rural men
- Rural women
- Rural children (drop outs)
- Rural school children
- Rural college students
- Community leaders (Gaon Burha and Panchayat)

Facilitators of contests:

- Community leaders
- School teachers
- Scientists
- Healers
- Forest department workers
- Pastoralists
- Traditional midwife
- Others
Plant Sample for the Evaluation in Biodiversity Contest

- Sampling of plants
- Herbarium preparation skills
- Art in showing plants in case of non-availability of live specimen
- Live specimen demonstration

Contests is entirely participatory from planning to organization, evaluation and rewards
Biodiversity Contests Among Rural Adults

Objectives

- Honouring & rewarding outstanding grassroots conservation and adaptation champions (recognition)

- Identifying best knowledge holders to promote him in conservation led adaptation (species for multiple outcomes)-community consultation process

- Identifying knowledge leaders to enhance location specific learning and checking erosion of biocultural knowledge systems (maintaining resilience)

- Identifying living encyclopedia to learn and develop catalogue on them (preserving knowledge and practices)
Recipe Contest: Learning in Food Based Biodiversity & Adaptations

- Rural women are mobilized in a participatory manner to demonstrate their culinary creativities in making traditional foods through using the best possible options from indigenous biodiversity - (Food for normal & abnormal weather)

- Participatory team- scientists and Gaon Burhas (village level customary chief), Panchayat members execute contest and evaluate the result (mean score was criteria)

- At the end of event, the best four contestants are rewarded in each village in a well-organized formal meeting

- The winners were further taken as biodiversity ambassadors for the promotion of TK and their participation in village level planning on biodiversity conservation-led adaptation programmes.
Recipe Contest Provide Opportunities

- Learning about habitats, source of learning and status (abundant, rare, critical, threatened, etc.) of plants used in food systems

- Diversities in plants species use at village level

- Diversity in aquatic animals and other insects species used in food & ethnomedicines

- Knowledge variability on cooking & processing

- Women’s creativity in food adaptations

- Potentialities in promoting conservation led adaptation and livelihood (such as food based micro-enterprises)
Contests Provide Opportunity to Harness Knowledge Typology on Adaptations and Livelihoods

<table>
<thead>
<tr>
<th>Community knowledge</th>
<th>known and practice by majority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual knowledge</td>
<td>creativity of one brain</td>
</tr>
<tr>
<td>Group knowledge</td>
<td>creativity of a group</td>
</tr>
<tr>
<td>Refined knowledge</td>
<td>any one of above adding individual/community/group creativity to enhance efficacy</td>
</tr>
</tbody>
</table>

Community knowledge: Bearing preparation

Community to group knowledge: Siang-nutri from traditional crops
Rewarding the Women: Studying Them for Conservation-led Adaptations Options

1. Rewarding winners (1st, 2nd, 3rd and consolation)
2. Studying winners
3. Making case studies (subject specific, viz. aquatic species and terrestrial species used in foods, foods and medicine both) foods for further project formulations and adaptation strategies
4. Understanding the compounded impacts on changes
5. Influencing policy decision on conservation-led adaptations and livelihoods
Community Leaders: Role and Responsibilities in Entire Contests

- Community members act as catalytic agents and mobilizers
- Diffusers of contests’ result
- Participating & developing in plans on adaptations
- Inspiring community members to take responsibilities for conservation-led adaptation/livelihoods (win-win game)
- Coordination with various agencies (Gatekeepers)
- Influencing horizontal & vertical leaning mode on location specific adaptations
Contest and Clue on Climate Change Impact on Cultural Food Diversity

- **Best approach for scoping study**: Ground truth to develop framework on climate change impact on cultural foods and adaptations

**Examples**: We found changes in fermented foods

- Exposure to UV for 5 min indicated maximum reduction of yeast population (up to 47%) and drastically affected the colony characters in *namdung* (*Pyrilla ocimoides*) and *ngosing* (*ngopi* – indigenous fish base) among the fermented food products.

- Yeast despite its mesophilic nature positively responded to low temperature but exhibited population decline to a greater degree when exposed to UV ray for 5 and 15 min in *namdung* and *ngosing*. 
After Contests: Community Workshop and Preference Ranking on Plant based Adaptations- SWOC Analysis

- Agriculture based adaptation
- Food based adaptation
- Handicrafts based adaptation
- Eco-tourism based adaptation
- Ethnomedicines based livelihoods
- Fish and animal based adaptation

Contests could be of best approach for scientist to:

- Learn how community select plant and animal biodiversity in adaptation, and how adaptations vary as per micro-ecosystems
- What adaptation practices are in development, transition, and how people make it at individual and community levels?
- What kinds of variability exist in plant based knowledge, adaptation and challenges to it?
- What social capital do exist in adaptation practices?
Formation of SHGs in Adaptation: Result of Recipe Contests

- Consensus on screening of best food and medicinal products in changing scenario
- Consensus on HRD and technological interventions for food adaptations
- Consensus on species selection for value addition (e.g. *Zanthoxylum rhesta*)
- Consensus on adaptive marketization models
- Consensus on inter and intra-household level conservation strategies of selected species (e.g. *Pyrilla ocimoides*) to be used in adaptive foods
- Protecting IPRs over plant based knowledge
Adaptation & Mitigation Concepts/Projects Evolved Based on Contests

- Establishing village traditional knowledge bank (VTKB)- *first village knowledge bank established in Sibut village, East Siang district*
- Establishing community knowledge garden (CKG)- for conservation and adaptations (in process of establishment)
- Establishing community reserve forest and link with REDD+ (in process of community consultation & protocol development)
- Community consultation protocol on development on adaptive/mitigation practices
Philosophy of Social-Ecological Resilience

We are happy if we get 8 bags (1 bag=50 kg, 1.0t/ha) of paddy in jhum-kheti (dry-land paddy) and 15 bags (1.5/ha) in pani-kheti (wet land paddy), provided Dony-Polo (Sun and Moon) Gods bless our other services from morang (community forest), jhum (slash and burn agriculture), forest streams, rivers and festivals. Y. J. Lego (50), July 2007, Pasighat

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India's average rice productivity is 2.17 t/ha, while of NE region is 1.5t/ha. Farmers of northern states (Punjab and Haryana) harvest rice 3.0 to 4.0 t/ha

Majority follow subsistence and integrated livelihoods adaptations
Mobilized Community Knowledge-lead Livelihoods Adaptations

Community Knowledge systems

Knowledge centered adaptations

Participatory planning

Knowledge recognition & validity

Sustainable biodiversity Conservation

Co-produced knowledge

Participatory evaluation

Community Adaptation & Learning Potential

Marginalized Knowledge Systems

Rural Community Context

Sustainable Practices

Social-ecological resilience

Enhanced integrated adaptations & livelihoods
Conclusion

- Contests led approaches could be an integral components in community mobilization for conservation-led or sustainable adaptation programmes with multiple benefits (species conservation, carbon sequestration, livelihood promotion).
- Climate change policy of India GIM (Green India Mission- climate change adaptation and mitigation) may opt contests led approaches for selecting outstanding community leaders, institutions, women, and youth to make them ambassadors in conservation-led adaptation,
- Such outstanding contests winners can play pivotal role in participatory village level planning, monitoring and evaluation of adaptation programmes (Co-production of knowledge),
- Identified adaptive practices (rich with biocultural knowledge, institution and networks) deserve greater resilience if we compare to livelihood adaptations of plain India (other than NE region, more than 70% parts of country is on the way to lose its genetic social-ecological resilience), and
- However, this resilient system of adaptation of Adi community is under transition through top-to-bottom led policy (exclusive & incompatible to this part of India)-subsidized horticulture, PDS, MGNREGA, etc. with poor governance system, thus increasing its vulnerability loop (degradation of biodiversity, institutions and social capital).
- We need integrated and inclusive adaptations for subsistence economy like Ar. P., and keeping its dynamism/resilience level sustained.
Some suggested Publications on the concepts


- **Singh RK and Agrawal A (2011).** Perceived weather anomalies and climate change: Community based adaptation practices in sustaining natural resources and livelihoods by Adi and Monpa Communities in Arunachal Pradesh, Eastern Himalaya (in editing process).

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